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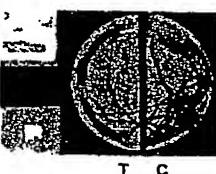
(54) Title: TO INVESTIGATE THE POTENTIAL OF USING BEETLE ODOURS TO DETER SLUGS IN VINING PEAS

Photograph showing slug response to beetle extracts overnight using the arena test inside the petridishes

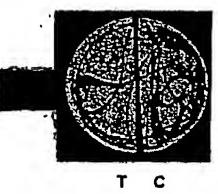
Pterostichus melanarius



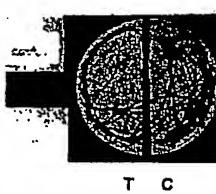
Pterostichus cupreus



Pterostichus madidus



Harpalus rufipes



The control and test sector is denoted by C and T under each specimen

(57) Abstract: In the UK slugs can be a major problem in vining peas. Their climbing and feeding habit on pea plants can often result in large numbers being picked up by the viners, causing contamination and possible rejection of the crop, consequently leaving the growers to meet the loss and face the costs. A likely answer, using the current interest in natural enemies as sources of potential chemical repellents, is now being studied by a PhD student at Cardiff University and hopefully this could lead to a new slug deterrent. It has been known for quite some time that slugs are reluctant to enter areas recently colonised by ground beetles, but it is only from an extensive series of laboratory experiments that it has now become clear that slugs respond to chemical secretions from the beetles pygidial glands - situated at the tip of the abdomen (see description figure 1). Normally discharged from the glands in response to attack by beetle predators, these secretions contain a cocktail of noxious substances - usually a mixture of acids and alkanes although the balance may vary from species to species (see description). That this defense mechanism also works to the beetles disadvantage in alerting its own potential prey was shown recently only to cardiff university (see description, Figures 2-5) as a significant change in the behaviour of the slugs when exposed to beetle extracts. Video recordings used to carry out these tests revealed a direct and rapid reaction on the part of the slugs when coming into contact with beetle extracts showing that the results are very encouraging (see description, page 1). The test also revealed that these slugs do not die during the course of this experiment. This must show that when slugs are exposed to beetle extracts there will be no side effects. The important chemicals have since been obtained, from commercial sources and tested to show its effect on deterring slugs from feeding on to growing plants and its effect on deterring slugs from climbing on to growing plants, under semi-field conditions. The findings conclude that beetle odours have the potential to develop into a new slug deterrent. Chemical companies will also receive the new slug deterrent as a potential source to stop and prevent slugs from entering into other crops currently for use in the UK.

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